IT Unit 3

Topic 1

# Ch 1 Organisations & Data Management

**Characteristics of data types, p 22**

**Elaborate under each of the following data types:**

1. Text, (string)

* This type of field holds a mix of characters (letters, numbers and special characters), also referred to as alphanumeric, to a limit of 255.

1. Numeric – integer, floating point

* Another key type of data format used in databases is numeric. These fields will only allow numbers to be entered. They are often used when the value is to be used in a calculation of some kind.

1. Date

* Strictly speaking, a date format is another variation of a numeric data type. The value is normally based on the number of days since the ‘zero’ day built into the operating system or DBMS.

1. Character

* This is a text field that will only accept a single alphanumeric character. It is used where there are multiple options for a value, such as gender. – M/F.

1. Boolean

* In cases when data to be entered falls into the categories of Yes/No, True/False or even On/Off, Boolean data type is used.

**Databases and database terminology, p 23**

1. What is a database?

* It is a software that is used to hold, retrieve and handle a range of data.

1. Explain the relationship between fields, records and tables.

* Fields are different categories that make up records, and once records have been formed they make up the table. So in basic terms the fields make up the columns of the table and records make up the rows.

1. Explain the purpose of the following objects in a database: forms, queries, reports & macros.

* **Forms**: A form allows an input screen to be formatted and linked to an underlying table
* **Queries**: A query allows you to select a set of specific data based on a series of criteria.
* **Reports**: A report formats the query data and allows you to add summary statistics, such as totals, as well as headings, to make the information easier to read and understand.
* **Macros**: Procedures in a database can be automated to some extent by the use of macros. When run, macros will carry out a set of predetermined tasks, such as printing a report.

1. What is the purpose of SQL?

* It’s a way of standardising how data is managed in databases, a properly constructed query helps to ensure any information we create is both relevant and complete.

1. Distinguish between a flat file and a relational database? What are the advantages of using a relational data base?

* The main difference between flat file and relational database is that a relational database has one than one table and therefore reduces redundant data. It also allows for more effective reports and forms to be created.

**Relational databases, p 25**

1. What does RDBMS refer to?

* Relational database management system, a database that stores data tables that are arranged in rows and columns, with tables linked by a common field; relationships may be one-to-one, one-to-many or many-to-many.

1. Explain with eg.s the following different types of relationships between tables in a relational database.
   1. One-to-one relationship

* A one-to one relationship is used when a record in one table is connected to only one record in the second table. E.g. An airline’s passenger details table will contain records for many passengers, while a seat allocation table may hold records related to the seats on a particular flight.
  1. One-to-many relationship
* It indicates that one record in the first table can be connected to more than one record in a second table. E.g. Several workers in an office may share a single telephone extension. Each extension record is related to several employee records.
  1. Many-to-many-relationship
* It indicates when each record in the first table can be connected to a number of records in the second table. At the same time, each record in the second table may be related to many records in the first table. E.g. A student detail table and a subject detail table may have a many-to-many relationship. Each student studies many subjects, and each subject is studied by many students.

1. What is meant by a foreign key?

* It’s a common linking field; a key defined in a second table that refers to a primary key in the first table.

**Creating an RDMS structure, p 26**

1. Why is it important to consider how to structure the data in a database? What needs to be considered?

* It is important to plan this carefully I order to maximise the efficiency of a relational database system. We need to consider the entities that exist in the problem, and we need to arrange the fields in a certain way to reduce redundant fields and maintain data integrity we do this through the action of normalisation.

1. What is the purpose of an entity relationship diagram? (go to p 28 to answer the following).

* It’s used by database designers to establish the interrelationships between different data elements. Once entities have been determined and their attributes identified, an ERD is created to show how the entities relate to one another.

1. What are entities, use an eg. from p 28, and how are they represented?

* In an ERD, entities are things about information which is sought (such as books or films).

1. What are the attributes and how are they represented?

* Attributes are the elements of data we collect about those entities (such as title and author of a book).

1. How are relationships represented?

* Relationships show the linking to draw related data from different entities.

1. What is the difference between the Chen and Bachman models of representing ERD’s?

* In the Chen model, ERDs use a simple set of symbols, much like a flowchart, while the Bachman style will show the attributes in a table for each entity. Both types of ERDs also show the relationships which exist between the entities in different ways.